ELSEVIER

Fisheries Research 43 (1999) 141–163

FISHERIES RESEARCH

www.elsevier.com/locate/fishres

# The role of life history parameters as indicators of stock structure

Gavin A. Begg[a,*], Jonathan A. Hare[b], Daniel D. Sheehan[c]

[a]*National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543, USA*
[b]*National Oceanic and Atmospheric Administration, National Ocean Service, Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, NC 28516, USA*
[c]*National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northeast Fisheries Science Center, 1 Blackburn Drive, Gloucester, MA 01930, USA*

**Abstract**

Vital population parameters, such as growth, survival, recruitment, reproduction, distribution, and abundance, are the consequences of life history modes to which fish stocks have evolved. Differences in these parameters have long been used to identify separate management stocks assuming that phenotypic variation is due to genotypic and environmental controls. However, few studies have examined the temporal stability of life history parameters, nor the mechanisms by which differences in these parameters between stocks are maintained. We examine the temporal and spatial stability of several life history parameters of Atlantic cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), and yellowtail flounder (*Limanda ferruginea*) in the northwest Atlantic Ocean to assess their utility for stock identification. Although significant temporal differences in vital rates were found within stocks, differences were generally maintained between stocks. Both genetic (biological) and oceanographic (physical) conditions play an integral role in maintaining stock structure. Although, the utility of vital life history parameters for stock identification may decrease with stock complexity and exploitation history, their applicability increases with the number of parameters examined. 

*Keywords:* Atlantic cod; Haddock; Yellowtail flounder; Oceanography; Fisheries management